

- 1 56. (New) The method of claim 54, further comprising at least one of:
2 acquiring the three-dimensional data;
3 displaying a representation of the three-dimensional data;
4 displaying a projected target point after the controlled system is targeted; and
5 taking an action responsive to targeting the position.
- 1 57. (New) The method of claim 3, wherein processing the three-dimensional data includes
2 generating a three-dimensional image from the three-dimensional data.
- 1 58. (New) The method of claim 5, wherein the three-dimensional image is the representation.
- 1 59. (New) The method of claim 5, wherein identifying the target includes:
2 pre-processing the three-dimensional data;
3 detecting a target represented by a subset of the three-dimensional data;
4 segmenting the subset from the remainder of the three-dimensional data;
5 extracting features of the target from the segmented data; and
6 classifying the segmented subset as including a particular kind of target based on the
7 extracted features.
- 1 60. (New) The method of claim 54, wherein sighting the position indicating a portion of a
2 displayed image generated from the three-dimensional data.
- 1 61. (New) The method of claim 54, wherein targeting the controlled system includes aiming
2 a weapon system at the sighted position.
- 1 62. (New) The method of claim 54, wherein targeting the controlled system includes aiming
2 a weapon system at the sighted position.

REMARKS

Claims 1-12, 15, 17, 19-39, 41-42, 44-45 are pending in the case, claim 46 having previously been cancelled, claims 13-14, 16, 18, 40, and 43 being canceled herein, and claims 47-62 being added herein.¹ More particularly, the Office Action rejected:

- claims 2, 23, and 32 as indefinite under 35 U.S.C. § 112, ¶2, for alleged antecedent basis problems;
- claims 1, 3, 5-6, 8-11, 15-17, 21, 24-26, 29-35, 37-38, 41-42 and 44-45 as anticipated under 35 U.S.C. § 102 (e) by U.S. Patent 6,662,036 (“Cosman”);
- claims 2, 4, and 22-23 as obvious at the time they were made under 35 U.S.C. § 103 (a) in view of Cosman combined with U.S. Letters Patent 5,683,229 (“Wangler”);
- claims 12-14, 19, 36, 39-40, and 43 as obvious at the time they were made under 35 U.S.C. § 103 (a) in view of Cosman combined with U.S. Patent Application Serial No. 09/745,696, filed December 22, 2000, and published October 17, 2002 (“Smith *et al.*”);
- claims 1-2, 4-11, 15-18, 20, 25-35, 37-38, 41-42, and 44-45 as obvious at the time they were made under 35 U.S.C. § 103 (a) in view of U.S. Letters Patent 5,644,386 (“Jenkins *et al.*”) combined with U.S. Letters Patent 5,448,936 (“Turner”); and
- claims 12-14, 36, and 39-40 as obvious at the time they were made under 35 U.S.C. § 103 (a) in view of Jenkins *et al.* combined with Turner and U.S. Patent Application Serial No. 09/745,696, filed December 22, 2000, and published October 17, 2002 (“Smith *et al.*”).

Applicant traverses each of the rejections.

I. CLAIMS 2, 23, AND 32 ARE DEFINITE

The Office Action rejected claims 2, 23, and 32 as indefinite under 35 U.S.C. § 112, ¶2, for alleged antecedent basis problems. The rejection of claim 23 has been overcome by amending the dependency thereof to provide an antecedent basis for the limitation “the LADAR system.” Claims 1 and 32 are definite as originally filed.

¹ Claims 39 and 44 have been amended for reasons unrelated to patentability and in ways that do not narrow their scope. These amendments were made to clarify the scope of these claims by correcting obvious typographical

The Office Action rejected claims 2 and 32, apparently because they recite “LADAR data” without having previously reciting a “LADAR transmitter.” Presumably, the Office meant to say “LADAR receiver.” However, claims 2 and 32 are not concerned with data acquisition. Data acquisition is not recited in claims 2 and 32 nor in claims 1 and 31 from which they depend. Claims 1-2 and 31-32 are instead directed to acting on acquired data. Claims 2 and 32 merely specify that the data acted upon is LADAR data.

Furthermore, the rejection is *prima facie* deficient. The Office Action, more particularly states:

In claims 2 and 32, it is not understood as to how “three-dimensional data comprises LADAR data” can be claimed when a LADAR transmitter has not previously been claimed.

Detailed Action, p. 2, ¶ 1. Applicant respectfully submits that the Office has employed the wrong standard. The M.P.E.P. opens its discussion of this requirement as follows:

2173 Claims Must Particularly Point Out and Distinctly Claim the Invention

The primary purpose of this requirement of definiteness of claim language is to ensure that the scope of the claims is clear so the public is informed of the boundaries of what constitutes infringement of the patent. A secondary purpose is to provide a clear measure of what applicants regard as the invention so that it can be determined whether the claimed invention meets all the criteria for patentability and whether the specification meets the criteria of 35 U.S.C. 112, first paragraph with respect to the claimed invention.

M.P.E.P. § 2173. However, the Office Action failed to identify which of these two purposes claims 2 and 32 fail to meet.

The essential inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity.

M.P.E.P. § 2173.02. Claims 2 and 32 clearly and definitely specify that the data being acted upon is LADAR data, and the Office has failed to establish that either the public cannot discern the bounds or the Office cannot examine the claim.

errors.

If the scope of the subject matter embraced by the claims is clear, and if applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims, then they claims comply with 35 U.S.C. 112, second paragraph.

M.P.E.P. § 2173.04. Accordingly, Applicant respectfully submits that claims 2, 23, and 32 are definite.

II. COSMAN FAILS TO ANTICIPATE ANY CLAIM

The Office Action rejected claims 1, 3, 5-6, 8-11, 15-17, 21, 24-26, 29-35, 37-38, 41-42 and 44-45 as anticipated under 35 U.S.C. § 102 (e) by U.S. Patent 6,662,036 (“Cosman”). An anticipating reference, by definition, must disclose every limitation of the rejected claim in the same relationship to one another as set forth in the claim. *In re Bond*, 15 U.S.P.Q.2d (BNA) 1566, 1567 (Fed. Cir. 1990). Office policy echoes this formulation M.P.E.P. § 2131. Applicant respectfully submits that Cosman fails to meet this stringent standard.

Each of Applicant’s independent claims 1, 11, 21, 25, 31, and 35 recites, in general, sighting a position in three-dimensional data and then targeting the cited position or some reasonably close variant thereof. The Office misconstrues Cosman as teaching these limitations. However, when properly construed, Cosman does not teach targeting the position from the three dimensional data.

In Cosman, a target is determined from a set of “scan data”, as is set forth in the specification at col. 3, lines 8-11:

Basically, scan data is stored to specify the location of a target in a patient’s body, generally defined in three-dimensional scan space (as slice data) with respect to references.

A second set of data is then acquired through a plurality of cameras:

The scan data is stored in a treatment processing system T which receives further data from a camera system C. Specifically the camera system C senses the instant position of the patient P and the beam B (in camera space) on the basis of marker locations on the patient P and the machine L.

col. 3, lines 13-16.¹ These two data sets are then correlated and combined:

¹ It is not completely clear from Cosman that the cameras are in fact acquiring three-dimensional data. The scan data is described as “three-dimensional.” The combined data set generated from the scan data and the camera data is

By using similar or related reference locations, scan space and camera space are correlated and the data is transformed to a common coordinate space.

col. 3, lines 16-18; *see also* col. 4, lines 27-34. The actual target is then moved to align the target with the targeted position:

Consequently, the beam B can be positioned and maintained to collimate at the desired target. *Note that both the machine L and a patient-supporting couch F are moveable to accomplish and maintain desired positional relationships between the beam B and the patient P as described in greater detail below.*

col. 3, lines 20-25 (emphasis added); *see also, inter alia*, col.5, lines 19- 23:

Thus, the camera system C provides data to coordinate the treatment machine L, the beam B relative to the patient P, aligning an anatomical target with the beam B at the isocenter point 7, or other focus of radiation.

Thus, Cosman has been misconstrued.

Cosman, when properly construed, discloses a method and apparatus that differs from the claimed invention at least in that:

- “sighting” and “targeting” are performed from two different data sets (the combined data and the scanned data, respectively), rather than a single set;
- “targeting” occurs prior to “sighting”, rather than *vice-versa*, as claimed; and
- “targeting” is not performed on a “sighted” position, as is recited in the claims, but rather from some other, *a priori*, identification.

To anticipate, Cosman must disclose every limitation of the rejected claim in the same relationship to one another as set forth in the claim. M.P.E.P. § 2131; *In re Bond*, 15 U.S.P.Q.2d (BNA) 1566, 1567 (Fed. Cir. 1990). Any one of these deficiencies is therefore sufficient to doom the anticipation rejections. Applicant accordingly respectfully submits that claims 1, 3, 5-6, 8-11, 15-17, 21, 24-26, 29-35, 37-38, 41-42 and 44-45 are novel over Cosman.

also described as three-dimensional. However, the camera data itself is not described at three-dimensional. Applicant therefore does not concede the proposition that the camera data is three-dimensional.

III. CLAIMS 2, 4, AND 22-23 ARE NOT OBVIOUS OVER COSMAN COMBINED WITH WANGLER

The Office Action rejected claims 2, 4, and 22-23 as obvious at the time they were made under 35 U.S.C. § 103 (a) in view of Cosman combined with U.S. Letters Patent 5,683,229 (“Wangler”). The most immediate deficiency in the *prima facie* case is that it relies upon the misconstruction of Cosman in the anticipation rejection. Detailed Action, p. 3, ¶ 5. However, other deficiencies exist.

The Office’s sole justification for the combination of Cosman and Wangler is to substitute one type of camera¹ for another, but the Office fails to establish why those in the art would seek to do so. It is the Office's burden to establish *prima facie* that the claimed invention is obvious and, where multiple references are cited, this includes the burden of establishing that the references are combinable. *In re Oetiker*, 24 U.S.P.Q.2d (BNA) 1443, 1445-46 (Fed. Cir. 1992). “[A] proper analysis under § 103 requires, *inter alia*, consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device, or carry out the claimed process; and (2) whether the prior art would also have revealed that in so making or carrying out, those of ordinary skill would have a reasonable expectation of success. Both the suggestion and the reasonable expectation of success must be founded in the prior art, not in the applicant's disclosure.” *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991) (citations omitted).

The Office has failed to identify either the requisite suggestion or expectation of success. The only suggestion in the record that three-dimensional data can be employed to overcome the cited deficiencies of two-dimensional data is found in Applicant’s specification, which cannot be used against Applicant in this manner. The Office merely, and summarily, states that it would have been “obvious” to substitute Wagner’s “camera” for the camera of Smith *et al.* However, “[t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.” *In re Gordon*, 221 U.S.P.Q. (BNA) 1125, 1127 (Fed. Cir. 1984); *In re Brouwer*, 37 U.S.P.Q.2d (BNA) 1663, 1666 (Fed. Cir. 1995); *In re Ochiai*, 37 U.S.P.Q.2d (BNA) 1127, 1131 (Fed. Cir. 1995).

Furthermore, suggestion or motivation to combine the teachings of two or more references cannot be supplied through abstraction but must be grounded in practical

considerations flowing from "positive, concrete evidence of record which justifies a combination of primary and secondary references." *In re Regal*, 188 U.S.P.Q. 136, 139 (C.C.P.A. 1975) (n. 6); *In re Yates*, 211 U.S.P.Q. (BNA) 1149, 1151 (C.C.P.A. 1981). A simple assertion such as the one offered in this case that such a combination would be obvious to one of ordinary skill in the art cannot substitute for the type of evidence required by *Regal*. See *In re Fine*, 5 USPQ2d 1596, 1599-1600 (Fed. Cir. 1988); *Yates*, at 1151. Indeed, the lack of suggestion and expectation of success, coupled with the fact that the only suggestion is found in Applicant's specification, indicates that hindsight is being used to find Applicant's claimed invention to have been obvious. See *Fine*, at 1600 (evidence of teaching or suggestion 'essential' to avoid hindsight).

IV. CLAIMS 12-14, 19, 36, 39-40, AND 43 ARE NOT OBVIOUS OVER COSMAN COMBINED WITH SMITH *ET AL.*

The Office Action rejected claims 12-14, 19, 36, 39-40, and 43 as obvious at the time they were made under 35 U.S.C. § 103 (a) in view of Cosman combined with U.S. Patent Application Serial No. 09/745,696, filed December 22, 2000, and published October 17, 2002 ("Smith *et al.*"). The most immediate deficiency in the *prima facie* case is that it relies upon the misconstruction of Cosman first set forth in the anticipation rejection. Detailed Action, p. 3, ¶ 6. Furthermore, Smith *et al.* employs two-dimensional data (see ¶¶ 34, 42, 48), which creates a host of problems the invention seeks to redress (see from p. 2, line 23 to p. 3, line 6), which would lead one skilled in the art to not consider it. Still, further, as Applicant asserted earlier in this examination, Smith *et al.* is outside the scope and content of the prior art. Applicant hereby incorporates by reference herein its arguments previously presented regarding this issue.

V. CLAIMS 1-2, 4-11, 15-18, 20, 25-35, 37-38, 41-42, AND 44-45 ARE NOT OBVIOUS OVER JENKINS *ET AL.* COMBINED WITH TURNER

The Office Action rejected claims 1-2, 4-11, 15-18, 20, 25-35, 37-38, 41-42, and 44-45 as obvious at the time they were made under 35 U.S.C. § 103 (a) in view of U.S. Letters Patent 5,644,386 ("Jenkins *et al.*") combined with U.S. Letters Patent 5,448,936 ("Turner"). Applicant notes that Jenkins *et al.* was previously cited as an anticipation of the claimed invention, which

¹ Applicant concedes that Wrangler uses the term "camera," but respectfully submits that the LADAR system of Wrangler is not a "camera", especially in the sense of the "camera" employed by Cosman.

Applicant traversed. More particularly, Applicant traversed that rejection because Jenkins *et al.* teaches a technique for displaying a subset of a three-dimensional data set, *i.e.*, it segments a subset of data corresponding to a “target”, transmits that subset to a remote location, and displays it. This is clearly established from the Abstract. Jenkins *et al.* does not teach either “sighting” or “targeting.”

The Office now concedes that Jenkins *et al.* does not teach targeting. Detailed Action, p. 4, ¶ 7. However, the Office continues misconstruing Jenkins *et al.* in the current Office Action, as is demonstrated by the following statement, with respect to Jenkins *et al.*, that “...it is hard to image [*sic*] what other use a targeting platform would have for target location data....” Detailed Action, p. 4, ¶ 7. A key word search on the HTML version of Jenkins *et al.* on the USPTO website reveals not even a single use of the phrase “targeting platform.” Furthermore, as mentioned above, the Office admits that Jenkins *et al.* nowhere teaches or suggests “targeting.” And there is no indication in Jenkins *et al.* that the platform 16, which appears to be a jeep or some other small vehicle, is armed. Applicant therefore respectfully submits that this construction is a hindsight reconstruction prompted by Applicant’s disclosure.

In addition, Applicant notes that Jenkins *et al.*, on its face, refutes the Office’s position. The background section at col. 1, line 16 to col. 2, line 34 is a thorough and considered discussion of the problem it addresses—namely, how to provide high fidelity video information to remote locations to support tactical and strategical decision making. While one possible decision would be to attack the “target,” there is no indication that the attack emanate from the platform acquiring the video imagery. The attack might, for instance, originate from an aircraft in close ground support. Finally, Jenkins *et al.* contains at col. 21, lines 19-40, a long list of uses for the technique it teaches that have nothing to do with a military application:

The above described invention makes it possible in a number of military and civilian applications to integrate advanced sensor technology and digital communications options to enable a remote sensor to quickly and accurately transmit high fidelity imagery of a target scene over limited bandwidth data links. For instance, unmanned air and ground vehicles used both for military and commercial purposes may be programmed to find topographical and man-made features automatically. For other civilian applications such as law enforcement, data for robotics force-fighting, crime deterrence, and border patrol functions may be quickly and accurately transmitted. Additionally, it is possible to monitor roadways and provide data for vehicle collision

avoidance. In strictly military applications, battlefield synchronizations, situational awareness, and combat identification demands rapid and accurate transmission of high-quality information between soldier and decision-maker. For example, application of combined arms tactics gives a commander a flexible fighting force, and also expands information sharing requirements among force components. The present invention provides a valuable tool for such applications.

Thus, Jenkins *et al.* eliminates the need for any exercise of imagination in determining alternative uses for its technique.

One significance of the misconstruction of Jenkins *et al.* discussed above is that it infects the *prima facie* case with a fatal flaw. The burden includes showing an objective teaching in the cited art that would lead one of ordinary skill in the art to combine the teachings of references. *Fine*, 5 U.S.P.Q.2d (BNA) at 1598. The prior art must disclose each and every element of the claimed invention and any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002). Where multiple references are cited, the Office's burden includes the burden of establishing that the references are combinable. *In re Oetiker*, 24 U.S.P.Q.2d (BNA) 1443, 1445-46 (Fed. Cir. 1992).

In the present case, the Office justified the combination of Jenkins *et al.* and Turner as follows:

Applicant is putting the method and associated apparatus of Jenkins *et al.* to use as explicitly encouraged by Jenkins *et al.* (see col. 20) in an analogous art setting. It would have been obvious to a person of ordinary skill in the art at the time of the invention to apply the teachings of Turner to the Jenkins *et al.* apparatus and associated method and have an apparatus and associated method used in combination with a control system for targeting via target location data.

Detailed Action, pp. 4-5, ¶ 7. The general citation to col. 20 of Jenkins *et al.* does little to support the position. The statement most closely supporting the Office's position is found at lines 31-34:

For example, a combat platform or control and command node at a remote site and using this invention, has access to data characterizing a local scene. The transmitted packet of information 62 contains all information necessary for a receiving platform to display the detected target in the local scene in a number of user-selectable formats (shown in FIGS. 5A-5C).

However, this passage is entirely consistent with Applicant's position regarding Jenkins *et al.*

More particularly, Jenkins *et al.* teaches a technique for displaying a subset of a three-dimensional data set, *i.e.*, it segments a subset of data corresponding to a "target", transmits that subset to a remote location, and displays it. Jenkins *et al.* does not teach either "sighting" or "targeting." Although the range of decisions that may be reached at the remote location might include attacking the displayed target, there is no teaching that the attack come from a weapons system either sighted or targeted from the displayed information. The only place this teaching is found is in Applicant's disclosure, and that teaching cannot be used against the Applicant. *In re Dembiczak*, 50 U.S.P.Q.2d (BNA) 1614, 1616-1617 (Fed. Cir. 1999) ("...the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher," *citation omitted*).

Furthermore, Jenkins *et al.* and Turner are not properly combinable. Practical considerations in operation and structure of the claimed invention and the reference evidence the distinctiveness of these two fields of endeavor. *See In re Clay*, 23 U.S.P.Q.2d (BNA) 1058, 1060-61 (Fed.Cir. 1992); *In re Horn*, 203 U.S.P.Q. (BNA) 969, 971 (C.C.P.A. 1979). It is apparent from even a cursory examination of Turner that it does not contemplate the need to transmit data to a remote location. Whatever decisions that need to be made are made *a priori* or on sight. Furthermore, Jenkins *et al.* employs an automatic target recognition system to identify the target and segment it out of the background. Not only is there no need for this in Turner, but it would be detrimental, since the targets are visually acquired and targeted. Thus, since the Turner is directed to a different purpose than the claimed invention and embodies a different approach, one of ordinary skill in the art "would accordingly have had less motivation or occasion to consider it". *Clay*, 23 U.S.P.Q.2d (BNA) 1061.

Thus, the rejection of claims 1-2, 4-11, 15-18, 20, 25-35, 37-38, 41-42, and 44-45 as obvious in view of Jenkins *et al.* combined with Turner is *prima facie* deficient. The *prima facie* case is deficient because (1) it relies on a misconstruction of Jenkins *et al.*; (2) it uses Applicant's own teachings regarding "sighting" and "targeting" against the Applicant; and (3) Jenkins *et al.* and Turner are not properly combinable. Accordingly, Applicant requests that the rejections be withdrawn.

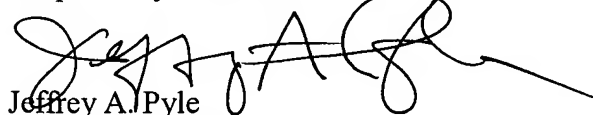
**VI. CLAIMS 12-14, 36, AND 39-40 ARE NOT OBVIOUS OVER
JENKINS ET AL. COMBINED WITH TURNER ET AL. AND SMITH ET AL.**

The Office Action rejected claims 12-14, 36, and 39-40 as obvious at the time they were made under 35 U.S.C. § 103 (a) in view of Jenkins *et al.* combined with Turner and U.S. Patent Application Serial No. 09/745,696, filed December 22, 2000, and published October 17, 2002 ("Smith *et al.*"). As is established immediately above, Jenkins *et al.* is not properly combinable or properly combined with Turner. Furthermore, as Applicant asserted earlier in this examination, Smith *et al.* is outside the scope and content of the prior art. Applicant hereby incorporates by reference herein its arguments previously presented regarding this issue. Still further, as is also established above, Smith *et al.* employs two-dimensional data (see ¶¶ 34, 42, 48), which creates a host of problems the invention seeks to redress (see from p. 2, line 23 to p. 3, line 6), which would lead one skilled in the art to not consider it. Smith *et al.* is therefore directed to a different problem with a technique that raises additional problems in the context of the invention. One of ordinary skill in the art "would accordingly have had less motivation or occasion to consider it". *In re Clay*, 23 U.S.P.Q.2d (BNA) 1058, 1060-61 (Fed.Cir. 1992). Applicant therefore respectfully submits that this rejection is also deficient and requests that it be withdrawn.

Applicant believes the claims are in condition for allowance and requests that they be allowed to issue.

The Examiner is invited to contact the undersigned attorney at (713) 934-4053 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,



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